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Radiation Therapy: A Treatment for Early Stage Breast Cancer

Radiation therapy as primary treatment for breast cancer is a promising technique for women who have early stage breast cancer. This procedure, which allows a woman to keep her breast, involves removing the lump or cancerous tissue from the breast (lumpectomy) and some or all of the underarm lymph nodes. The breast is then treated with radiation (X-ray).

During the last 20 years, considerable experience has been gained with this form of treatment. Research comparing this treatment with the traditional surgical approach, mastectomy, is continuing. Preliminary research results are encouraging, though data on the long-term effects are still being collected. At the present time, the survival rates for women with early stage breast cancer who are treated with radiation therapy seem to be equal to those for women treated by mastectomy.

This booklet describes the procedures used in radiation therapy and tells you what to expect—from the beginning of your treatment to your recovery at home. After reading this booklet and discussing it with your doctor, you may want to talk with another woman who has had radiation therapy to treat her breast cancer. She may have some practical advice and be able to answer some of your questions.

Informed Consent: When Treatment Is Recommended

When treatment is recommended, most health care facilities now require patients to sign a form stating their willingness to proceed. This is to certify that you understand what procedures will be done and have consented to have them performed.

Consent to treatment is only meaningful if given by a patient who has had an opportunity to learn about recommended alternatives and to evaluate them. Before consenting to any course of treatment, be sure your doctor lets you know:

- The recommended procedure;
- Its purpose;
- Risks and side effects associated with it;
- Likely consequences with and without treatment;
- Other available alternatives; and
- Advantages and disadvantages of one treatment over another.

Even if you want your doctor to assume full responsibility for all decisionmaking, you are likely to discover that your concerns about treatment decrease as your understanding of breast cancer and its treatment increases.

Questions To Ask Your Doctor

Before Radiation Therapy

- What kind of procedure are you recommending?
- What are the potential risks and benefits?
- Am I a candidate for any other type of procedure?
- What are the risks and benefits of those alternatives?
- How should I expect to look after the treatment?
- How should I expect to feel?

After Radiation Therapy

- When will I be able to get back into my normal routine?
- What can I do to ensure a safe recovery?
- What problems, if any, should I report to you?
- What type of exercises should I do?
- How frequently should I see you for a checkup?

Treatment Steps

Once a biopsy has been done and breast cancer has been diagnosed, radiation treatment usually involves the following steps:

- Surgery to remove some or all of the underarm lymph nodes;
- External radiation therapy to the breast and surrounding area; and
- “Booster” radiation therapy to the biopsy site.



Lymph Node Surgery

Before radiation therapy begins, some or all of the underarm lymph nodes are usually removed to determine if the cancer has spread beyond the breast. If all of the lymph nodes are removed, the surgery is called axillary dissection; if only some of the lymph nodes are removed, it is called axillary sampling. Other tests such as bone and liver scans may also be done to provide your doctor with valuable information regarding further treatment. This process is known as “staging” the disease.

Hospital procedures and policies vary, but there are a number of things you can probably expect to have happen when you check in for lymph node surgery.

In the Hospital. You will probably be admitted the afternoon before your surgery so that some routine tests, such as blood and urine tests and a chest X-ray, can be performed. Shortly before the operation, the surgical area (the underarm) will be shaved, and you may be given some medication to help you relax.

When it is time for your surgery, you will be taken to the operating room and an anesthesiologist will put you to sleep. Electrocardiogram sensors will be attached to your arms and legs with adhesive pads to monitor your heart rate during surgery. The surgical area will be cleaned, and sterile sheets will be draped over your body, except for the area around the operation. An axillary dissection usually takes several hours; an axillary sampling about an hour.

When you awaken from surgery, you will be in the recovery room. Your underarm area will be bandaged, and a tube may be in place at the surgical site to drain any fluid that may accumulate. Your throat may be sore from the tube that was placed in it to carry air to your lungs during surgery. You may also feel a little nauseated and have a dry mouth—these are common side effects of anesthesia.

You will spend an hour or so in the recovery room. Oxygen will be available in case you need it to ease your breathing. Wires may be taped to your chest to measure your heartbeat. An intravenous (IV) tube will be in a vein in your arm to give fluid, nourishment, or medication after surgery. The IV will probably be removed after you begin to drink and eat.

It's common to feel drowsy for several hours after surgery. You may feel some discomfort under your arm; some women experience numbness, tingling, or pain in the chest, shoulder area, and upper arm. Your doctor will prescribe medication to relieve any discomfort you may have following your surgery. The numbness under your arm will decrease gradually, but total feeling may not return for a long time.

After you return to your room, a nurse will check your temperature, pulse, blood pressure, and bandage. She will ask you to turn, cough, and breathe deeply to keep your lungs clear after the anesthesia. You may also be encouraged to move your feet and legs to improve your blood circulation. Although each

woman reacts to surgery differently, you will probably discover that by the next day you will be able to sit up in bed and walk from your bed to a chair in your room. Your doctor will probably encourage you to walk around and eat solid food as soon as possible.



After Surgery. At first you will have to be careful not to move your arm too much. But by the second or third day, you may be ready to begin exercises to ease the tension in your arm and shoulder. Women who have axillary sampling usually recover their arm motion fairly quickly because their surgery is not as extensive as axillary dissection.

You will be taking sponge baths for a few days after surgery until your incision starts to heal. Before you leave the hospital, ask the doctor or nurse for instructions on taking care of your incision. When you have permission to bathe or shower, do so gently and pat, don't rub, the area of your incision.

The average stay in the hospital for an axillary dissection is 7 to 10 days, and 2 to 4 days for an axillary sampling. Before you leave, the tube that drains fluid from your incision will be removed. Your stitches will be taken out in 1 to 3 weeks at the doctor's office or clinic.

Once you are home, you should continue to exercise until you have regained the full use of your arm. As you increase your exercise and begin to renew your daily activities, you must be careful not to overexert yourself. Take clues from your body; rest before you become tired.

To keep your skin soft and to promote healing, you may want to massage your incision gently with cocoa butter or vitamin E cream. As time goes by, the redness, bruising, and swelling will disappear. But you should watch for any signs of infection such as inflammation, tenderness, or drainage. If you develop any of these signs or a fever, call your doctor. Although each woman recovers from surgery at her own rate, most women are ready for the next part of their treatment, radiation therapy, about 1 or 2 weeks after their lymph node surgery.

Exercising After Surgery. Exercising will help you ease the tension in your arm and shoulder and will hasten your recovery. It is especially important for women who have had an axillary dissection. You will probably be able to begin exercising within a few days of your operation. Your doctor, nurse, or physical therapist can show you what exercises to do.

Ask your doctor if you might begin with these few simple movements:

- Lie in bed with your arm at your side. Raise your arm straight up and back trying to touch the headboard.
- Raise your shoulders. Rotate them forward, down, and back in a circular motion to loosen your chest, shoulder, and upper back muscles.

- Lying in bed, clasp your hands behind your head and push your elbows into the mattress.
- With your elbow bent and your arm at a 90 degree angle to your body, rotate your shoulder forward until the forearm is down then up.
- With your arm raised, clench and unclench your fist.
- Breathe deeply.
- Rotate your chin to the left and right. Cock your head sideways.

The key is to exercise only to the point of pulling or pain—don't push yourself.

External Radiation Therapy

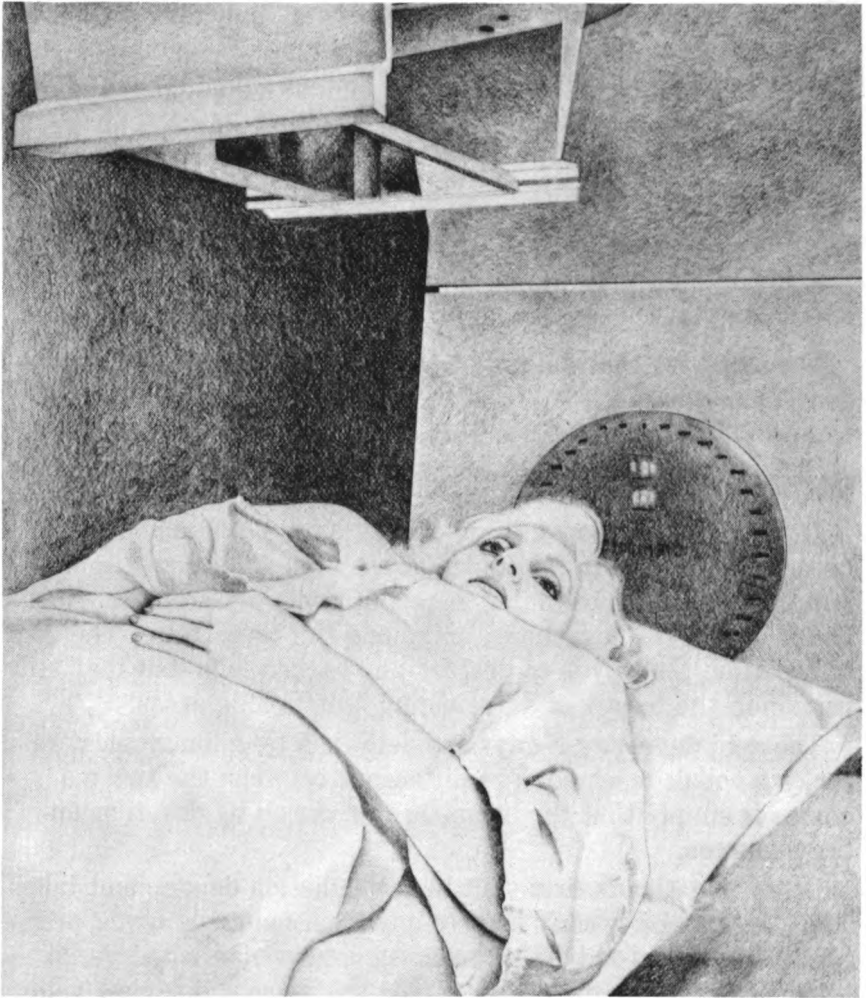
During this procedure, high-energy X-rays are aimed at the breast and sometimes at nearby areas that still contain some lymph nodes, such as under the arm (if only a “sampling” was done), above the collarbone, and along the breastbone. The goal of radiation therapy is to destroy any cancer cells that may still remain in the breast or surrounding lymph node areas.

These high-energy X-rays are delivered by a linear accelerator or a cobalt machine. The difference between the two machines is simply that the beams are produced by different energy sources.

Often, a patient's first visit to the radiation department takes 1 to 2 hours and doesn't involve any treatments. You will probably talk with the radiation therapist, a physician with special training in the use of radiation. The therapist will review your records and decide the best way to proceed with your treatment.

You will probably also meet the technician who delivers the treatment, and the radiation therapy nurse, who works closely with the doctor and can answer any questions you have about treatment, potential side effects, and what you can do about them.

During the first visit, ink lines or small tattoo marks will be drawn on your skin around the treatment area to mark exactly where to aim the radiation. The marks are generally made with



permanent ink, and you should not attempt to wash them off until treatment is completed. These marks ensure that the area treated is the same every day. Many women wear old underclothes during treatment because the marking may stain clothing.

The radiation therapist will consult with the dosimetrist, who computes the dosages of radiation. The standard treatment for early stage breast cancer is almost always 4,400 to 5,000 rads (radiation absorbed dose). A rad refers to the amount of radiation that is absorbed by the breast tissue.

Your actual number of treatments will depend on the total dose you need. Usually, treatments are given 5 days a week, Monday through Friday, for about 5 weeks. To protect normal tissue, it is better to give a little radiation each day than to give a lot of radiation all at once. A single treatment takes about 20 to 25 minutes. Only a few minutes of this time are of exposure to radiation; most of the time is spent putting the patient in position. Most people continue to work or pursue other activities throughout the treatment period.

It is very important to have all your treatments. However, if you have to miss a treatment, it can be made up. If you do not finish the full course, you may not have gotten enough radiation to destroy the cancer cells.

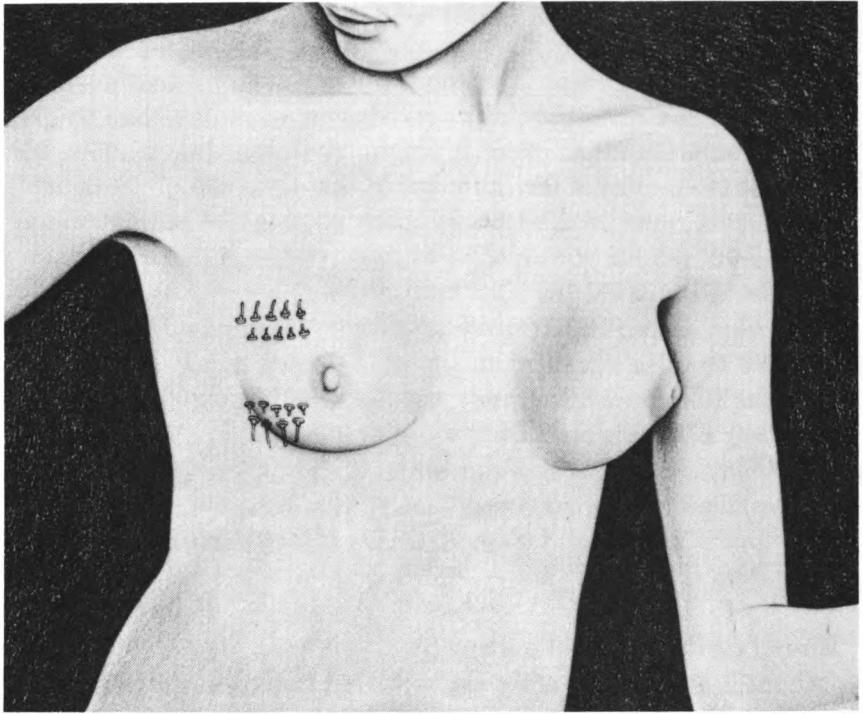
For more information about what to expect during radiation therapy, contact the National Cancer Institute for a copy of *Radiation Therapy and You: A Guide to Self-Help During Treatment*.

“Booster” Radiation Therapy

About 1 or 2 weeks after the external radiation therapy has been completed, nearly all women will receive a concentrated “booster” dose of radiation to the area where the breast lump was located.

This treatment may be done either externally, using an electron beam, or internally with an implant of radioactive material. The electron beam “booster” is delivered by a type of linear accelerator machine similar to the one used in external radiation therapy. The treatment procedure is also similar to that of external radiation therapy, with the patient coming to the hospital daily for 5 to 10 days. If you have this type of booster treatment, you may notice an increase in skin redness at the site of the electron beam treatments—this is normal.

The implant procedure requires a short hospital stay of 2 to 3 days. Thin plastic tubes are threaded through the breast tissue where the original lump was removed. This may be done using either a local or general anesthesia. The number and location of the tubes depend on the size and location of the tumor that was removed. The doctor may take an X-ray of your breast after inserting the tubes to make sure they are in the correct position.



When you return to your hospital room, radioactive seeds (usually iridium) will be inserted into the tubes. The implant will remain in your breast for 2 to 3 days during which time it will deliver approximately 2,000 rads to the surrounding tissue.

While the implant is in place, you will stay in a private room because the implant emits small amounts of radiation, which may be a possible risk to those that come in close contact with you. For that reason, visitors and the nursing staff will have to limit their time with you.

You may notice some breast sensitivity around the area of the implant, especially if you move around a lot, but you should not have much pain or other discomfort. If you are uncomfortable, ask your nurse for some pain medication. You'll be free to move around your room, sit and read, do needlework or write letters.

The implant is removed in your room, without anesthesia. The process feels very much like having stitches taken out. Once it is removed there is no risk of radiation exposure to others and you can usually go home.

Side Effects of Radiation Therapy

During Treatment

Many women feel mildly to moderately tired during radiation therapy, especially as treatments progress. Treatment for cancer can be stressful and the daily trips to the hospital take a lot of energy. Try to rest as much as you can and plan your activities at levels that are comfortable for you. Don't push yourself. It is especially important to eat properly while you are having radiation treatments, because your body needs wholesome food to restore its strength and to repair injured cells. It's also important for you to maintain your weight. Even if you are overweight, do not try to lose weight until you have finished all of your treatments.

The skin around the treated area may begin to look reddened, irritated, tanned, or sunburned. In some women the skin becomes quite dry, in others it becomes very moist, especially under the breast fold. These side effects are most likely to occur toward the end of treatment.

Be gentle with your skin. Try not to irritate it. Don't use perfumed or deodorant soaps, ointments, or anything besides lukewarm water and plain soap (like Ivory) on your breast. Some women wear soft cotton bras, without wiring, or go braless whenever possible. Some like to wear a soft T-shirt or other loose clothing.

Your doctor and nurse will be closely watching you as treatment progresses. Be sure to mention any side effects you may have.

After Treatment

You may notice other changes in your breast due to the radiation therapy and changes may continue for 6 to 12 months after treatment. As the redness goes away, you will notice a slight darkening of the skin—as when a sunburn fades to a suntan. The pores may be enlarged and more noticeable.

You may have some change in skin sensitivity—some women report increased sensation, others have decreased feeling. The skin and the fatty tissue of the breast may feel thicker, and you may notice that your breast is firmer than it was before your



radiation treatment. Some older women have said that their breast feels and looks as it did when they were in their twenties. Others report a change in the size of the treated breast—it may become larger because of fluid buildup or smaller due to development of fibrous tissue, but many women have little or no change at all.

After 10 to 12 months, you should notice few additional changes caused by the radiation therapy. If changes in size, shape, appearance, or texture occur after this time, report them to your doctor at once.

Precautions

A problem that may arise after treatment for breast cancer is swelling of the arm on the side of the treatment. This condition, called lymphedema, is caused by the loss or damage of underarm lymph nodes and their connecting vessels. It occurs because circulation of lymph fluid is slowed in the arm, making it harder to fight infection. You should take special care of your arm to prevent infection.

Follow these simple rules:

- Avoid burns while cooking or smoking;
- Avoid sunburns;
- Have all injections, vaccinations, blood samples, and blood pressure tests done on the other arm whenever possible;
- Use an electric razor with a narrow head for underarm shaving to reduce the risk of nicks or scratches;
- Carry heavy packages or handbags on the other arm;
- Wash cuts promptly, treat them with antibacterial medication, and cover them with a sterile dressing; check often for redness, soreness, or other signs of infection;
- Never cut cuticles; use hand cream or lotion;
- Wear watches or jewelry loosely, if at all, on the operated arm;
- Wear protective gloves when gardening and when using strong detergents, etc.;
- Use a thimble when sewing;
- Avoid harsh chemicals and abrasive compounds;
- Use insect repellent to avoid bites and stings; and
- Avoid elastic cuffs on blouses and nightgowns.

Call your doctor at once if your arm becomes red, swollen, or feels hot. In the meantime, put your arm over your head and pump your fist.

Though you should be cautious, it's also important to use your arm normally—don't favor it or keep it dependent.

Common Questions About Radiation Therapy

Q. Will radiation affect my normal cells?

A. Radiation is a strong treatment for cancer and can sometimes affect normal cells. However, normal cells are not as sensitive to radiation and will usually recover when treatment is finished.

Q. Will anything be done to protect me from excess radiation?

A. The X-ray machine with which you'll be treated has special protections built in to limit your radiation to the specific area outlined. If needed, other areas of your body will be covered by special lead shields.

Q. What will radiation feel like during the treatment?

A. Radiation treatment is like having a regular X-ray; most patients feel no sensation. You may feel warmth or a tingling, but you're not likely to feel any pain or discomfort.

Q. Will I be radioactive after treatments?

A. No. The treatment beam is the only thing that is radioactive when you receive external radiation therapy. Neither your normal tissues nor the cancerous tissues are radioactive during or after treatment. If you have a radiation implant, small amounts of radiation will be emitted. However, once the implant is removed, you are no longer radioactive.

Q. What will my breast look like after treatment?

A. There is no way to predict the cosmetic outcome of this type of treatment for a particular woman. The extent of the initial surgery, the size of the breast, the type of incision, and the effects of radiation on the skin are all factors. However, the breast usually looks quite normal and most women are pleased that they chose this breast-saving treatment.

Q. What is chemotherapy and when is it used?

A. Chemotherapy is the use of drugs to destroy cancer cells. It may be used in addition to radiation therapy in cases where cancer cells are found in the underarm lymph nodes, suggesting that other cancer cells may be circulating elsewhere in the body. Anticancer drugs are used to reach areas of the body where cancer cells may be hiding, and to eliminate them before they multiply and hurt the normal cells and organs. More information on this supplementary treatment can

be found in *Chemotherapy and You: A Guide to Self-Help During Treatment* and *Adjuvant Chemotherapy: A Breast Cancer Fact Sheet*, both of which are available from the National Cancer Institute.

- Q. *How frequently should I plan to see a doctor after radiation therapy treatment?*
- A. Your doctor will tell you when to schedule your first post-treatment exam. The two of you will then decide whether you should continue to make regular visits to him or to a medical oncologist, an internist, a gynecologist, or a family practitioner. Most doctors believe that women treated for breast cancer should have professional exams every 3 to 6 months for the first 3 years after surgery. More information on followup exams, possible signs of recurrence, and taking care of yourself can be found in *After Breast Cancer: A Guide to Followup Care*, another booklet available from the National Cancer Institute.

Adjusting Emotionally

After you have completed treatment, you'll have a lot of things on your mind. You may think about the fact that you've just been treated for a serious disease and hope this treatment will control your cancer forever. Breast cancer often has a dramatic emotional impact and you may be wondering how it will affect your lifestyle and your personal relationships. You might even be unsure how to act toward your family and friends.

Although every woman reacts to breast cancer differently, these types of concerns are common. Just as you will be taking action to help yourself physically recover from treatment, you can take steps to ease your emotional adjustment as well.

Expressing your feelings to your doctor and the people you love can be important emotional medicine. If you try to handle your problems alone, everyone will lose: you will lose chances to express yourself, your family and friends will lose opportunities to share your difficulties and help you work through them, and your doctor may not understand what you need to fully recover.

Remember, your family and close friends can be your strongest supporters. But chances are, they aren't quite sure how they can show their support. You can help them by being open and honest about the way you feel.

If informal approaches to dealing with your feelings don't work, consider professional help. Psychiatrists, psychologists, social workers, nurses, and religious counselors can help your emotional adjustment.

Others Are Willing To Help

You may also want to talk with other women who have had similar experiences. Reach to Recovery is an American Cancer Society program designed to help breast cancer patients meet the physical, emotional, and cosmetic needs related to cancer and its treatment. Women who have had radiation therapy to treat their breast cancer volunteer to participate in the program by providing practical information and sharing their experiences with others. All volunteers are carefully selected and trained.



Programs vary from city to city. Call your local American Cancer Society unit for more information or contact departments of radiation therapy at major medical centers.

Intimacy

Whether you are single or married, you are likely to wonder how your treatment for breast cancer will affect your intimate relationships. Your partner will also have concerns. You can help each other by expressing them.

Intimate relationships are built on mutual love, trust, attraction, shared interests, common experiences, and a host of other feelings. Breast cancer treatment will not necessarily change these feelings. What it may change is some of the physical aspects of lovemaking—what's pleasurable to you and what's not. It may also temporarily affect you and your partner's attitude toward intimacy.

Because fatigue often is associated with radiation treatment, you may need additional rest. You can continue to enjoy an intimate relationship by planning special time to spend alone with your partner.

Sometimes a partner is afraid that touching the treated breast will hurt you. Let your partner know what's comfortable to you and what's not. You can bring new closeness to your relationship by talking about your treatment and the way you feel.

Helping Children Cope

Children react to illness in a variety of ways. Some feel angry at their mothers for becoming ill. Others are frightened. Still others worry that they might have caused the illness.

Although you may be tempted to protect your children by not telling them about your disease and its treatment, it's usually better to be honest. Even young children sense when something is wrong. Preschool children often feel deserted when their mother goes to the hospital. And if she returns feeling weak or depressed, they may become frightened. Teenagers sometimes suddenly change their behavior because they fear their mother's illness will keep them from maintaining the independence they have begun to enjoy. If you can avoid imposing too much responsibility on your teenage children, and if you share some of your feelings with them, you may be able to keep their problems to a minimum.

It is a good idea to tell your children the truth as simply and positively as possible. Be careful not to burden them with any

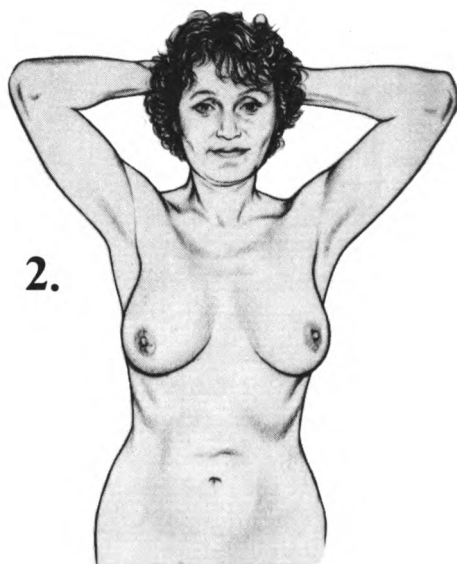
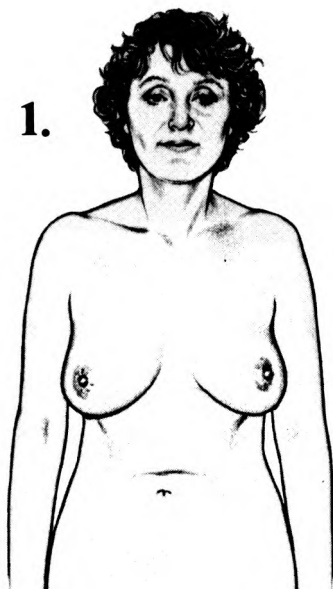
more information than is necessary. Encourage their questions, and answer those questions honestly. You will probably find that talking helps your children to accept your illness and the temporary disruption it causes.

Breast Self-Exam

After radiation therapy, breast self-examination (BSE) should continue to be part of your routine. You will want to examine your breasts and your scar (if you had the lymph nodes removed) once a month to note any changes in the way they look or feel. Though you may have been doing BSE before your treatment, you will have to relearn what's considered "normal" for you now.

If you menstruate, the best time to do BSE is 2 or 3 days after your period ends, when your breasts are least likely to be tender or swollen. If you no longer menstruate, pick a day, such as the first day of the month, to do BSE. Here is how to do BSE:

1. Stand before a mirror. Inspect your breast for anything unusual, such as any discharge from the nipples, or puckering, dimpling, or scaling of the skin.



In front of the mirror, inspect the scar for swelling, lumps, redness, or color change.

The next two steps are designed to emphasize any change in the shape or contour of your breasts. As you do them, you should be able to feel your chest muscles tighten.

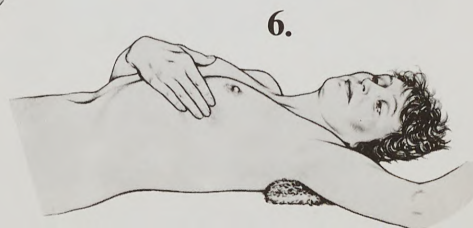
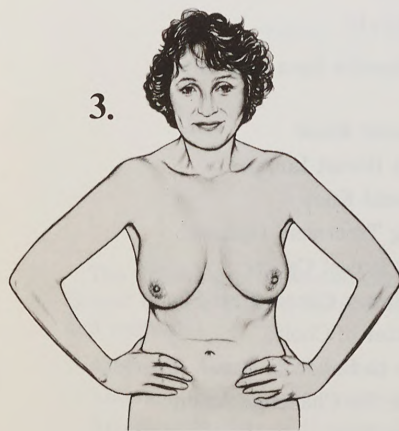
2. Watching closely in the mirror, clasp your hands behind your head and press your hands forward.
3. Next, press your hands firmly on your hips and bow slightly toward your mirror as you pull your shoulders and elbows forward.

The next part of the exam is done while standing. Some women do it in the shower because fingers glide over soapy skin, making it easy to concentrate on the texture underneath.

4. Raise your arm on the untreated side. Using three or four fingers of your other hand, explore your breast firmly, carefully, and thoroughly.

Beginning at the outer edge, press the flat part of your fingers in small circles, moving the circles slowly around the breast. Gradually work toward the nipple. Be sure to cover the entire breast. Pay special attention to the area between the breast and the armpit, including the armpit itself. Feel for any unusual lump or mass under the skin.

5. Gently squeeze the nipple and look for a discharge. Repeat the exam on the treated breast. Raise your arm on the treated side. Use three or four fingers of your other hand and examine your scar from the lymph node surgery. Begin at the top of the scar. Press gently, using small circular motions, and feel the entire length of the scar. Look for thickenings, lumps, or hard places. As with your breasts, familiarity with your scar makes it easier to notice any changes.
6. Steps 4 and 5 should be repeated lying down. Lie flat on your back, raise your arm on the unoperated side over your head and place a pillow or folded towel under your shoulder. This position flattens the breast and makes it easier to examine. Use the same circular motion described earlier.



For More Information

The Cancer Information Service (CIS) is a nationwide toll-free telephone program sponsored by the National Cancer Institute. Trained information specialists are available to answer questions about cancer from the public, cancer patients and their families, and health professionals. By calling the following toll-free number, you will be automatically connected to the CIS office serving your area:

1-800-4-CANCER*

*In Alaska call 1-800-638-6070; in Washington, D.C., and its suburbs in Maryland and Virginia, call 636-5700; on Oahu call 524-1234 (call collect from neighboring islands).

Spanish-speaking staff members are available to callers from the following areas (daytime hours only): California (area codes 213, 714, 619, and 805), Florida, Georgia, Illinois, Northern New Jersey, New York City, and Texas.

Other NCI Breast Cancer Patient Education Booklets

Call the Cancer Information Service for a copy of the following:

Breast Exams: What You Should Know
Questions and Answers About Breast Lumps
Breast Biopsy: What You Should Know
Breast Cancer: Understanding Treatment Options
Mastectomy: A Treatment for Breast Cancer
Adjuvant Chemotherapy: A Breast Cancer Fact Sheet
Breast Reconstruction: A Matter of Choice
After Breast Cancer: A Guide to Followup Care
When Cancer Recurs: Meeting the Challenge Again
Advanced Cancer: Living Each Day

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American Academy of Family Physicians

American College of Obstetricians and Gynecologists

American Society of Hospital Pharmacists

Oncology Nursing Society